

REMARKS

Applicants have canceled without prejudice claim 11, which is drawn to a non-elected embodiment. Applicants have also added new claims 12-15. New claim 12 is identical to claim 1 except that it includes in step (A) all of the limitations recited in claim 4 and excludes step (B) recited in original claim 1. The addition of new claim 12 has necessitated the cancellation of claims 4. New claim 14 is identical to claim 1 except that it includes in step (B) all of the limitations recited in claim 8 and excludes step (D) recited in original claim 1. The addition of new claim 14 has necessitated the cancellation of claim 8. New claims 13 and 15 depend from claims 12 and 14, respectively. Support for the limitation recited in new claims 13 and 15 can be found in claim 2. Finally, Applicants have corrected minor deficiencies in the Specification and in claims 1 and 9. No new matter has been introduced by the above amendments.

Claims 1-3, 5-7, 9-10, and 12-15 are currently pending. Reconsideration of the application, as amended, is requested in view of the remarks below.

Rejection under 35 U.S.C. § 112, 2nd paragraph

The Examiner rejects claims 1, 2, 4, 6, 8, and 9 as being indefinite on eight grounds. See the Office Action, page 2, line 9 to page 3, line 21. Applicants traverse each ground below:

(1) The Examiner points out that “[c]laim 1 is indefinite for the phrase ‘heat-setting twisted PTT yarns with a density of 200-240 g/m by use of a Superba.’ [S]aid phrase is indefinite because it is unclear if the ‘twist’ is equivalent or different to the ‘cabling’ of the previous step.” See the Office Action, page 2, lines 12-14. To promote clarity, Applicants have replaced the word “twisted” recited in claim 1 with “cabled.”

(2) The Examiner asserts that “it is unclear what the density is referring to. Is this the density of the PTT polymer or the yarns? The units of density are conventionally mass per volume, rather than mass per length. Does applicant intend to claim the *linear density* or denier ... of the yarn instead of density.” See the Office Action, page 2, lines 15-18. Applicants submit that the term “density” refers to the linear density of the PTT yarns, not that of the PTT polymer. Typically, a yarn is put on a metal plate during the heat-setting process. Here, “density” is determined by the weight of the yarn per meter on the plate. Note that, according to Merriam-

Webster's Collegiate Dictionary, 10th Ed. (a copy of which is attached hereto as "Exhibit A.") the term "density" refers to a quantity over per unit volume, unit area, or unit length. Thus, contrary to the Examiner's assertion, the term "density" recited in claim 1 is proper and definite.

(3) The Examiner indicates that "claim 1 is indefinite for the use of a registered trade name, 'Superba.' ... The claim scope is uncertain since the trademark or trade name is used to identify a source of goods, not the goods themselves." See the Office Action, page 3, lines 1-5. Applicants would like to point out that the term "Superba" here refers to a device, rather than a source of goods. Indeed, the Specification indicates that "a heat setting device may be Autoclave, Seussen, or Superba." See page 9, lines 10-11. To more particularly point out the subject matter, Applicants have replaced the term "a Superba" with the phrase "a Superba heat-setting device."

(4) The Examiner points out that "[c]laim 1 is also indefinite for the use of the phrase 'becking a dyed carpet.' ... Does applicants intend the step to be 'backing' a carpet with an adhesive backcoat and/or a secondary backing? ... Claim 9 is similarly rejected." See the Office Action, page 3, lines 8-12. Applicants have replaced the term "becking" with "backing" recited in both claims 1 and 9.

(5) The Examiner asserts that "[c]laim 2 is indefinite because it is unclear if the dope dyed PTT yarns are the same yarns or different yarns which are beck dyed in claim 1." See the Office Action, page 3, lines 13-14. Step (A) in claim 1 recites the phrase "cabling poly(trimethylene terephthalate) [i.e., PTT] yarns." According to the Specification, the PTT carpet of the present invention may be produced from a dope dyed yarn. See page 8, lines 3-5. Thus, the term "dope dyed yarns" recited in claim 2 clearly refers to the PTT yarn recited in step (A) in claim 1.

(6) The Examiner points out that "[c]laim 4 is indefinite because it is unclear at what point in the claimed process the new step of 'condensing the PTT yarns without a heat-setting step,' since claim 1 already includes a heat-setting step." See the Office Action, page 3, lines 15-17. As mentioned above, Applicants have canceled claim 4 and incorporated all of its limitations into step (A) in new claim 12. Claim 12 does not recite a heat-setting step.

(7) The Examiner asserts that "[c]laim 6 is indefinite for limiting the height of a loop pile carpet (i.e., non-cut loop pile carpet), since claim 1 already includes the step of "shearing," or

cutting the loop pile.” See the Office Action, page 3, lines 18-19. Applicants disagree. It appears that the Examiner erroneously equates the term “shearing” with “cutting.” The Specification indicates that, to conduct the shearing step, piles are uniformly trimmed, not cut as asserted by the Examiner, with a spiral knife. See the Specification, page 11, lines 21-23. In other words, the term “shearing” recited in step (F) of claim 1 means trimming, not cutting.

(8) The Examiner points out that “[c]laim 8 is indefinite because it is unclear if applicants intend to encompass an embodiment of space dyeing the PTT yarns and then disperse dyeing said yarns.” See the Office Action, page 3, lines 20-21. As mentioned above, Applicants have canceled claim 8 and incorporated all of its limitations into step (B) in new claim 14. New claim 14 recites “space dyeing the PTT yarns,” but not “disperse dyeing the yarn.”

For the reasons set forth above, Applicants submit that claim 1, 2, 6, and 9 are no longer indefinite and request that this rejection be withdrawn.

Rejection under 35 U.S.C. § 103(a)

Claims 1-7, 9, and 10 are rejected as being obvious over Howell et al., U.S. Patent 6,242,091 (“Howell”) in view of Chuah, U.S. Patent 6,315,934 (“Chuah”). See the Office Action, page 4, lines 9-10.

Independent claim 1 is discussed first. It covers a method for preparing a poly(trimethylene terephthalate) (PTT) carpet. The method includes: (A) cabling PTT yarns; (B) heat-setting cabled PTT yarns with a density of 200 to 240 g/m by use of a Superba heat-setting device at a main tunnel temperature of 120 to 160°C and a band speed of 4 to 9 m/min; (C) tufting heat-set PTT yarns at 5 to 15 stitches/inch; (D) beck-dyeing a tufted carpet without carriers by use of a disperse dye under conditions of atmospheric pressure and a dyeing temperature of 90 to 100°C; (E) backing a dyed carpet; and (F) shearing the resulting carpet.

The Examiner asserts that “Howell teaches the presently claimed invention with the exception of (a) the band speed of the Superba®, (b) the number of stitches per inch in the tufted carpet, and (c) the lack of a carrier and the process conditions of the beck dyeing step. With respect to the band speed, it is argued that this limitation is obvious over the cited Howell reference, since it has been held that where the general conditions of a claim are disclosed in the

prior art, finding the optimum or workable ranges involves only routine skill in the art." See the Office Action, page 5, lines 1-6. Applicants disagree.

Howell discloses PTT carpets that have excellent stain-resistance, texture retention, and resistance to crushing. See the Abstract. It also discloses that the carpets can be heat-set by Superba®. See column 4, lines 29-32. However, as correctly pointed out by the Examiner, it does not disclose or suggest heat-setting PTT yarns in a Superba heat-setting device at a band speed of 4 to 9 m/min, a limitation of claim 1. It also does not disclose or suggest heat-set PTT yarns with a density of 200 to 240 g/m, another limitation of claim 1. These two limitations are unique to this invention. Indeed, PTT carpets heat-set under these conditions have superior properties (e.g., appearance, pencil point, and color fastness to rubbing). See Tables 1 and 2 at pages 16-17 of the Specification.

Chuah discloses a process of preparing PTT yarns that have the bulk and resiliency of nylon as well as the stain resistance and low static generation of polyester. See the Abstract. It also discloses heat-setting, tufting, and dyeing the PTT yarns. See column 8, lines 1-3. However, similar to Howell, Chuah does not disclose or suggest heat-setting PTT yarns with a density of 200 to 240 g/m in a Superba heat-setting device at a band speed of 4 to 9 m/min, two limitations of claim 1. In other words, Chuah does not cure the deficiencies in Howell. Claim 1 is therefore not rendered obvious by the combination of Howell and Chuah.

Even if a *prima facie* case of obviousness has been made (which Applicants do not concede), it can be successfully rebutted by a showing of unexpected advantages of a PTT carpet prepared by the method of claim 1. Specifically, PTT yarns heat-set at a density of 200 to 240 g/m or PTT yarns heat-set at a band speed of 4 to 9 m/min have superior properties than those heat-set under different conditions. According to the Specification, Example 1 describes heat-setting PTT yarns at a density of 240 g/m and at a band speed of 6 m/70 sec (i.e., 5.1 m/min); Comparative Example 3 describes a method identical to that described in Example 1 except that the yarns were heat-set at a band speed of 4 m/70 sec (i.e., 3.4 m/min, less than 4 m/min required in claim 1); and Comparative Example 4 describes a method identical to that described in Example 1 except that the yarns were heat-set at a density of 180 g/m (less than 200 g/m recited in claim 1). See Table 1 at page 16. Results showed that the PTT carpet prepared in Example 1 possessed superior properties (Appearance: AA, Pencil Point: A, Color fastness: 5) than that

prepared in Comparative Example 3 (Appearance: A, Pencil Point: B, Color fastness: 4) and that prepared in Comparative Example 4 (Appearance: B, Pencil Point: A, Color fastness: 5). Given these unexpected advantages, claim 1 is clearly not obvious over Howell in view of Chuah. Neither are claims 2, 3, 5-7, 9, and 10, all of which depend from claim 1.

Claim 8 is rejected as being obvious over Howell and Chuah, and further in view of Kay et al., U.S. Patent 5,160,347 ("Kay"). See the Office Action, page 7, lines 19-21.

Applicants have canceled claim 8 and have incorporated all of its limitations into new claim 14. Thus, Applicants will discuss new claim 14 instead.

Claim 14 covers a method for preparing a PTT carpet. The method is identical to that of claim 1 except that the PTT yarns are space dyed, rather than beck dyed. Like claim 1, the patentability of claim 14, resides at least in part, in heat-setting PTT yarns with a density of 200 to 240 g/m in a Superba heat-setting device at a band speed of 4 to 9 m/min.

As mentioned above, neither Howell nor Chuah discloses or suggests heat-setting PTT yarns with a density of 200 to 240 g/m in a Superba heat-setting device at a band speed of 4 to 9 m/min, two limitations required in claim 14.

Kay discloses space dyeing polyester yarns by spraying with water dispersions of disperse dyes without thickeners or carriers. Kay does not disclose or suggest heat-setting PTT yarns in a Superba heat-setting device, let alone at a density of 200 to 240 g/m or at a band speed of 4 to 9 m/min, two limitations of claim 14. Thus, Kay does not cure the deficiencies in Howell and Chuah. Claim 14 is therefore not rendered obvious by any combination of Howell, Chuah, and Kay. Even if a *prima facie* case of obviousness has been made (which Applicants do not concede), it can still be successfully rebutted by a showing of the unexpected advantages discussed above.

As claim 14 is not obvious over Howell and Chuah, in view of Kay, neither is claim 15 dependent from claim 14.

New claims

New claims 14 and 15 have been discussed above. Applicants will only discuss new claims 12 and 13 here. Independent claim 12 covers a method for preparing a PTT carpet. The method is identical to that of claim 1 except that the PTT yarns are cabled with an intermingle

machine at 400 to 1000 m/min under an air pressure of 4 to 8 bars. None of Howell, Chuah, and Kay discloses or suggests cabling PTT yarns with an intermingle machine, let alone at 400 to 1000 m/min under an air pressure of 4 to 8 bars, as required in claim 12.

Thus, claim 12 is not rendered obvious by Howell, Chuah, and Kay. Neither is claim 13 dependent from claim 12.

CONCLUSION


Applicants submit that the grounds for rejection asserted by the Examiner have been overcome, and that claims 1-3, 5-7, 9-10, and 12-15 as pending, define subject matter that is definite and nonobvious. On this basis, it is submitted that all claims are now in condition for allowance, an action of which is requested.

Enclosed is a check for the Petition for Extension of Time fee. Please apply any other charges to deposit account 06-1050, referencing Attorney's Docket No.: 13921-002001.

Respectfully submitted,

Date: _____

5-24-04



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